

<p>96-321737/32 D25 E37 RHON 94.12.23 RHONE POULENC CHIM *WO 9620129-A1 94.12.23 94FR-015551 (96.07.04) C01B 33/32 Modified alkali metal silicate contg. additional di- or tri-valent metal ions - are useful in silicate-based detergent compsns. for dishwashers (Frn) C96-102432 N(AM AU BB BG BR BY CA CN CZ EE FI GE HU JP KG KP KR KZ LK LR LT LV MD MG MN MX NO NZ PL RO RU SG SI SK TJ TT UA UZ VN) R(AT BE CH DE DK ES FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG) Addnl. Data: CUIF J, JOUBERT D 95.12.18 95WO-FR01682</p>	<p>D(11-B11, 11-D1A) E(31-P2A)</p> <p>SiO₂/M₂O of 0.5-4 with an alkaline earth or trivalent salt chosen from Ca, Mg, Sr and Ce in proportions such that the molar ratio of dissolved cation A(n+) from the salt/M₂O from the silicate is between 0.01 to < 0.1; (ii) heating the obtd. mixt. to 50-120 (pref. 80-100) °C; (iii) drying the prod. until the evapn. loss measured at 700 °C is 15-30 (pref. 18-28) wt.%; and (B) the use of the new prod. in a detergent compsn.</p>
<p>Modified alkaline metal silicate (I) having SiO₂ : M₂O molar ratio of 0.5-4 (where M = an alkali metal) is claimed. The modified silicate contains alkaline earth or trivalent ions. A(n+) (where n = 2 or 3) is selected from Ca, Mg, Sr or Ce such that the molar ratio A(n+) : M₂O is from 0.005 to < 0.1 (pref. 0.01 to < 0.1).</p> <p>Also claimed are: (A) the prepn. of the modified alkali metal silicate comprising: (i) mixing an alkali metal silicate in aq. soln. of molar ratio</p>	<p><u>USE</u> (I) are useful in detergent compsns. for dishwashers, imparting non-corrosive and protective properties.</p> <p><u>ADVANTAGE</u> (I) resolves the problem of glass corrosion which has been encountered in other detergent compsns.</p> <p><u>PREFERRED METAL</u> The pref. alkaline earth metal is Ca²⁺. The pref. compsn. for use in</p> <p style="text-align: right;">WO 9620129-A+</p>

<p>dishwashers contains 10-40% (wt.) of the modified silicate relative to the detergent compsn. (as dry material).</p> <p><u>EXAMPLE</u> A corrosion test on glass was reproduced; certain wash conditions of dishwashers partic. cycles of dipping, rinsing and drying. The glass slide (2.5×7.5 cm) of chemical compsn. Si : 21-43%. Ca : 2.8-5.8% Mg : 1.6-3.4% Na : 6.8-14.2% Al : 0.3-0.7%, was half-immersed and slightly inclined in 80 ml of aq. wash soln. at ambient temp. contg. 5 g/l of the test prod.</p> <p>For a prod. initially solid, the slide was introduced only when it was entirely dissolved. The recipient contg. the semi-immersed slide was then closed and placed in an oven at 60 °C for 3 weeks. Three times per week, the slide was removed, thoroughly rinsed with deionised water, then wiped with paper and re-immersed in the soln. (replenished to allow for evapn.).</p> <p>After 3 weeks, the slide was weighed after cooling to ambient temp. and any change in mass recorded. It was examined for corrosion in the form of iridescence, fogging, scratches or frosting. The pH of the soln. was measured at ambient temp. before immersing the slide and at the end of the experiment. A prod. (1) for comparison was prepd. in an aq. soln. of ratio SiO₂ : Na₂O, 2.1 contg. 55% water.</p>	<p>A mixt. of this soln. (1) with a soln. contg. 73.4 g/l of CaCl₂ 2H₂O so that the ratio of Ca²⁺ : Na₂O ratio was 0.01 with stirring. The two solns. were reacted for 30 minutes at 80 °C. The resultant prod. was then oven-dried at 60 °C as a thin layer until the final water content was 26%; the prod. was then finely ground to a particle dia. of 200 µm and designated prod. (4).</p> <p>The glass corrosion test gave the following results:- for prod. (1): pH (initial) 11.6, pH (final) 11.3, wt. loss -2.1 mg and observations opaque fog; and for prod. (4): pH (initial) 11.6, pH (final) 11.2, wt. loss -0.2 mg, and observations no visible corrosion. (DL) (15pp2003DwgNo0/0) SR:1.Jnl.Ref EP209840 EP550048 JP6330088</p> <p style="text-align: right;">WO 9620129-A</p>
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